WHAT IS CLAIMED IS:

1. An emission spectroscopic processing apparatus, comprising:

a spectroscope for spectrally separating input light emitted from a process unit into component spectra;

a light receiving unit including a series of light receiving elements for detecting light quantities of said component spectra on a wavelength basis;

a first signal hold unit for holding sequentially each of detection signals outputted from a subset of adjacent light receiving elements contained in said series of light receiving elements during a first period;

an adder unit for adding together the detection signals of adjacent light receiving elements of said light receiving unit inclusive of said held detection signals of said subset of the adjacent light receiving elements;

a second signal hold unit for holding sequentially sum outputs of said adder unit; and

a signal processing unit for determining a state of said process unit on the basis of the output of said second signal hold unit.

2. An emission spectroscopic processing apparatus according to claim 1,

wherein said first signal hold unit includes

a first stage of signal hold part for holding

sequentially the detection signals outputted from a subset of adjacent light receiving elements in said series of light receiving element for a first period, respectively; and

a second stage of signal hold part for holding sequentially sum outputs of said first stage of signal hold part sequentially for a second period longer than said first period.

3. An emission spectroscopic processing apparatus according to claim 1,

wherein said signal processing unit includes

selecting means for inputting either the output of said adder unit or the detection signal outputted from each of said adjacent light receiving elements of said light receiving unit.

4. An emission spectroscopic processing apparatus according to claim 1,

wherein said first signal hold unit is so designed as to hold detection signals of said input light amplified with ratios differing from one to another of plural adjacent light receiving elements of said light receiving unit.

5. An emission spectroscopic processing apparatus according to claim 1,

said process unit being a plasma processing apparatus,

wherein said emission spectroscopic processing apparatus is designed to stop etching

process of said plasma processing apparatus on the basis of a sum output of said adder unit.

6. A plasma processing method using a spectroscopic processing unit, comprising the steps of:

separating spectrally plasma radiation emitted from a vacuum process chamber into component spectra;

converting said component spectra into a time series of analogue electric signals composed of different wavelength components at a predetermined period;

adding together analogue signals of the different wavelength components;

converting a plurality of added signals into digital quantities on a predetermined-period basis;

digitally adding together said plurality of added and converted signals a plural number of times on a plural-signal basis;

determining discriminatively an end point of a predetermined plasma process on the basis of a signal resulting from said digital addition step; and

terminating said predetermined plasma process.

7. A plasma processing method using a spectroscopic processing unit, comprising the steps of:

separating spectrally plasma radiation emitted from a vacuum process chamber into component spectra;

converting said component spectra into a time series of analogue electric signals composed of different wavelength components at a predetermined period;

adding together analogue signals of the different wavelength components;

converting a plurality of plural added signals into digital quantities on a predetermined-period basis;

digitally adding said plurality of added and converted signals a plural number of times on a plural-signal basis;

adding said digitally added wavelength-based signals by referencing reference to wavelengths corresponding to a set of emission spectrum wavelengths intrinsic to materials as established previously;

determining discriminatively an end point of a predetermined plasma process on the basis of a signal resulting from said digital addition step; and

terminating said predetermined plasma process.

8. A plasma processing method using a spectroscopic processing unit, comprising the steps of:

separating spectrally plasma radiation emitted from a vacuum process chamber into component spectra;

converting said component spectra into a time series of analogue electric signals composed of

different wavelength components at a predetermined period;

adding together analogue signals of the different wavelength components;

converting a plurality of plural added signals into digital quantities on a predetermined-period basis;

digitally adding said plurality of added and converted signals a plural number of times on a plural-signal basis;

adding said digitally added wavelength-based signals by referencing to wavelengths corresponding to a set of emission spectrum wavelengths intrinsic to materials as established previously;

adding or alternatively subtracting or alternatively dividing said digitally added material-based signals correspondingly in dependence on said material;

determining discriminatively an end point of a predetermined plasma process on the basis of a signal resulting from said digital addition step; and

terminating said predetermined plasma process.